AMERICAN VETERINARY REVIEW,

JULY, 1880.

ORIGINAL ARTICLES.

CHICKEN CHOLERA.

STUDY ON THE CONDITIONS OF THE NON-RECIDIVITY OF THE DISEASE AND OF SOME OTHER OF ITS CHARACTERS.

By M. L. Pasteur.*

In a former communication, I announced, among other conclusions, that chicken cholera was produced by a microscopical parasite; that there existed an attenuated virus of this disease; and lastly, that one or several inoculations with that virus would insure protection from the fatal effects of a subsequent inoculation.† From the strong similarities that our study discovers between the effects of vaccine and human variola, it becomes an

*Translated by A. Liautard.

†Messrs. Moritz and Perroncito, as well as Mr. Toussaint, who went further than they, had left the question of the parallelism of that affection doubtful. In my preceding note, I expressed myself in a different manner; but I have since learned that Mr. Toussaint had failed in his endeavors to obtain successive cultures in neutralized urine, a merit which, however, he does not claim, though he still enjoys the credit of the endeavor.

inquiry of interest to know whether the immunity referred to can be absolute, not only respecting the regions of the body which have received the preventive inoculation, but also what should be the point selected for the operation, and as well, the mode of introduction of the disease and the degree of receptivity in the animal chosen for the experiment.*

To explain more clearly and more briefly the results I wish to relate, allow me to use the word *vaccinate* in referring to the inoculation of the chicken with attenuated virus. This admitted, I may say, on the faith of many experiments, that the effects of vaccination vary with chickens; that some resist a very active virus after one preventive inoculation of weak virus; that others need two and even three preventive inoculations; that in all cases, in fact, any preventive inoculation has its own proper action, and it always protects in a certain measure; that, in a word, though there will always be degrees of effectiveness, it is always possible to accomplish a successful vaccination—that is, to bring the chicken to a condition where the most active virus will cease to be effective.

A brief recital of the methods and results of the experiments which furnished the demonstration of my views, will render their statements more intelligible:

I take eighty fresh hens—I call them *fresh* because they never had the disease either spontaneously or in any other way. Of these I inoculate twenty with the lymph of the most virulent character, and *all die*. From the sixty remaining, I inoculate

---

*What I have heard or read of human vaccine, and what I may infer from my own experiments on chicken cholera, induce me to believe that vaccination seldom produces its maximum effect. Indeed, where is the vaccinator who would without apprehension expose his vaccinated patients to a fatal epidemic of variola? Reports exist of vaccinated persons who had previously had variola, and in whom vaccination proved afterwards efficacious, who subsequently suffered attacks of variola and had had this disease three times. Dr. Brouardel reports: Mrs. C. D. vaccinated in her youth; came to Passy when 30 years old. Her face was pitted from variola, when at 20 or 22 years. In 1868 she was treated for another attack of confluent small-pox. She came to Paris in 1869; was successfully vaccinated in 1870, and in 1874 had another attack of varioloid—presenting the phenomenon in the same person of two attacks of vaccination and three of variola, of which two were of the confluent variety.

another twenty with the weakest virus I can obtain, and *none die.* Are the animals thus vaccinated safe from the effect of the more active virus? Yes; but only a certain proportion of their number. Indeed, if I inoculate them with strong virus, six or eight for instance, though sick, will not die, a fact to be weighed in connection with the effect of the first twenty vaccinations, which *all* resulted in death. From the first lot, I then take twenty fresh hens and inoculate them twice, at intervals of seven or eight days. Are they now protected against infection by the stronger virus? To obtain an answer, let us proceed to inoculate with it. This time, the result will vary from that of the second experiment; it will not be six or eight which will survive, but twelve or fifteen. Again, if I take from the first lot of fresh hens twenty others, and vaccinate them successively with attenuated virus, not once alone, but three or four times, the mortality which would have followed the inoculation with very strong virus, (the disease itself), will cease. In this case, it is evident that the animals have been brought to the condition of those which never contract the disease.

A plausible explanation of the non-recidivity referred to may be found in the theory that the microbe (the cause of the disease) finds, in the body of the animal, a congenial medium of culture, and to satisfy the requirements of its own existence, alters or destroys (which, in the present case, are equivalent terms) the elements of its own nutrition, which it either elaborates and appropriates to its own growth, or consumes with the oxyger which it borrows from the blood of the fowl.

When complete immunity is obtained, one may inoculate any of the muscles with the most virulent microbes without producing the slightest effect. In other words, the culture has become impossible in these muscles, inasmuch as they no longer contain the proper food of the microbe.

One cannot express his impressions when observing these phenomena. Here are twenty hens which have never been affected with the disease. I inoculate them in the thigh with the most effective virus, and carefully observe the effects of the inoculation. The next day all are down, very lame, very sleepy; the

inoculated muscle is enormously swollen, lardaceous in its thickness, and filled with the parasites. The mortality commences. One dies, then another, until, in forty-eight hours, all are dead.

Again, twenty others are vaccinated to the *maximum*, inoculated at the same hour as the others, at the same place, with the same virus and the same quantity. The next day, and the day following, all are active and alert; they eat, cluck; the rooster crows; it is the movement and life of perfect health, and the muscles of the thigh present no abnormal appearance. Often, even the mark of the inoculation cannot be seen, and this state of health continues, precisely as if no vaccination had been performed.

But is not this impossibility of culture of the parasite in the muscles confined to those muscles which have received the inoculations of prevention? It becomes, then, important to ascertain what would happen if the deadly virus was introduced either by the circulatory or digestive apparatus. I took ten hens, virgin from any inoculations, and ten others vacinated to the *maximum*; in all the most virulent lymph was injected in the jugular. The first ten died rapidly, several of them in twenty-four hours. On the contrary, the other ten recovered, without having suffered any appreciable sickness, aside from the results of the incision in the skin and jugular. The blood then was itself *vaccinated*, if it is proper so to express it—that is, the preventative culture had taken from it its materials of culture for the microbe.

And what would be the consequences of the introduction of the disease into the digestive canals? Let us try to produce an epizootic analogous to that which affect poultry-yards, by the food contaminated by the presence of the parasite. On the 11th of March, I put together twelve hens, bought in the market in the morning, with twelve others, previously inoculated *to the maximum*. Every day, I give to those twenty-four hens a meal of diseased muscles from a hen dead by the microbe. The following days the disease and mortality are observed amongst the twelve non-vaccinated birds, distinguished from the others, as those have had a platinum wire run through their combs. On the 26th of March, the experiment is stopped. Seven of the non-vaccinated

hens have died, and a post mortem inspection shows that, without doubt, the disease had infected the organism, either by the anterior digestive organs, or, and oftener, by the intestines, which are generally much inflamed, and sometimes extensively ulcerated, resembling in their lesions those of typhoid fever.* The five other hens, not vaccinated, are diseased; one in the most serious condition.† Of the twelve vaccinated, none died, and all are yet alive and in good health.

We may then present a resumé of the results as follows:

It is the presence of the parasite in the body which produces the disease commonly called *chicken cholera*, and caused the death of the fowl.

From the time when the culture ceases to be possible in the fowl, the disease cannot appear. Hens are then in the constitutional condition of animals which are never affected with the *chicken cholera*. The condition is the same as if they had been *vaccinated* from birth, the fœtal development, which formed the food proper of the microbes, having never been introduced in their bodies, or because these nutritive elements have disappeared in youth.

There is certainly no ground for surprise at discovering constitutions sometimes ready, sometime rebellious to inoculations; that is, to the culture of certain kinds of virus, when, as I have shown in my first note, one may see that the bouillon of yeast, prepared exactly like that of muscles of chickens, remains entirely unfit for the culture of the parasite of the chicken cholera, while it is perfectly good for the culture of a number of other microscopic species, especially the bacteridæ of anthrax.

The explanation resulting from the facts, as well as of the constitutional resistance of certain animals, (as that of the immunity created in hens by prophylactic inoculations), has in it

*The blood is full of microbe, and the internal organs are quite often covered with pus and false membranes, principally by the intestines, through which the microbe seems to have made its entrance.

†It died the 8th of April; another the 23d; three recovered. Altogether, nine died out of twelve. The 8th and 23d of April, the blood of the dead was found to be loaded with the microbe, and the abdomen showed lesions of peritonitis with false membranes.

nothing unnatural, when one considers that every culture generally modifies the medium in which it takes place; for example, the modification of the earth if for ordinary plants; of the plants and animals, if for their parasites; and of our liquids of culture, if for mucedinæ, vibrios or foments.

The modifications are manifested and characterized by the circumstances that new cultures of the same species in those media become rapidly difficult or impossible. Let us introduce into a bouillon of chicken, the microbe of cholera, and after three or four days, filtrate from the liquid all signs of the microbe; and again into this filtrated liquid introduce parasites: this last will prove wholly incapable of sustaining the slightest growth. Perfectly limpid after filtration, the liquid will so continue.

Can we then doubt that, by the culture in the chicken of the attenuated virus, the body of the bird is placed in a condition analogous to that of the filtrated liquid, which has been rendered incapable of cultivating the microbe? The comparison can extend still farther, for if the bouillon of culture is filtrated, not the fourth day of the culture, but the second, the filtrated liquid will yet remain good for the cultivation of the microbe, but with less force. Thus one will comprehend that after a culture of the weaker microbe in the body of the hen, the food of the microbe may not have been removed from all the different parts of the body. What remains will allow, then, a new culture, but equally in a limited degree. This is the effect of a first *vaccine*. Subsequent inoculations will by degrees remove all the materials of culture of the parasite. Consequently, by the action of the circulatory system, a moment will come when all new culture will become sterile. It is only then that the recidivity becomes impossible, and that the animal is entirely and effectually vaccinated. One might be surprised to see the first culture of the weak virus cease before the nutritive elements of the microbe are consumed. But it must be remembered, that the microbe, ærobic being, is not at all in the body of the animal, in the same condition as in an artificial medium of culture. Here there is no obstacle to its multiplication; in the body, on the contrary, it is continually in conflict with the cells of organs, while they also, as

ærobic beings, are always ready to appropriate the oxygen to their own uses.

Is this, however, the only possible explanation of the phenomena? Rigorously judged, no. One may understand the facts of non-recidivity by supposing that life of the microbe, instead of appropriating or destroying certain elements in the body of the animal, on the contrary, add others to them, which would be for this microbe an obstacle to its further development. The history of the life of inferior beings, and of beings in general, authorizes such a supposition. Excreta born from vital functions may resist a vital function of the same nature. In certain fermentations, one may see antagonistic products take birth during and through the act of fermentation itself, and put an end to the active life of the ferments and to the fermentations a long time before they are complete. In the cultures of our microbe, there might be a formation of products, whose presence would explain, somewhat, the non-recidivity and the vaccinations.

Our artificial culture of the parasite will again allow us to overthrow this supposition. Let us prepare an artificial culture of the microbe, and, after evaporating it to coldness in a vacuum, bring it back to its former bulk by the bouillons of culture. If the extract contains matters poisonous to the life of the microbe, and if such is the cause of the possible non-culture of the filtrated liquid, the new added portion of the medium ought to remain sterile. But in fact, it is not so. We cannot believe that during the life of the parasite, substances may appear likely to resist its further development, an observation which corroborates the opinion to which we were brought upon the causes of the non-recidivity of certain virulent diseases.

In relation to the powers of those extracts of artificial culture of the microbe of the chicken cholera, another question presents itself. We have just demonstrated that these extracts do not contain substances capable of preventing the culture of the microbe. But might they not contain some with which it would be proper to *vaccinate* the chickens? I have prepared a culture of the size of 120 cubic centimeters; filtrated and evaporated to coldness, always with manipulations so conducted as to preserve

its purity. This culture left an extract which was re-dissolved in 2 cubic centimeters of pure water, all of which was afterwards injected under the skin of a fresh hen. Several days after, this bird was inoculated with a very strong virus, took the cholera and died under conditions similar to those of the *non-vaccinated* chickens.

This kind of experiment carries us to an observation as new as it is curious, in its pathological connections:

When one injects under the skin of a fresh hen, in good health, the extract of a filtrated culture of the microbe, corresponding to a very abundant development of the parasite, the hen (after a nervous disorder which passes off in fifteen minutes, and sometimes is only manifested by a slightly hurried respiration and a motion of the beak, which opens and closes several times) assumes the shape of a ball, remains immobile, refuses to eat and has a desire for sleeping, very marked, as in the case of the disease produced by inoculation of the microbe. The only difference consists in the fact that the sleep is lighter than in the real disease, the hen waking up at the slightest noise. This somnolence lasts about four hours, after which the bird returns to perfect health, as if nothing had happened.*

I have several times repeated that experiment, with the same

* Here is the observations of one experiment:

The 4th of March, at 10:30, a fresh hen is inoculated under the skin with the extract of a culture of the microbe of chicken cholera, 120 cubic centimeters in volume. After some moments of hurried breathing, the tongue is agitated in her open beak. After about fifteen minutes, tendency to sleep. The beak is closed, the hen quiet, immobile, nearly gathered into a ball; her eyes are closed, but open at the slightest noise, only to close again. She sleeps, but easily wakes up, only to fall back to her sleep again.

12 o'clock, M.: Same condition; refuses to eat; is very sleepy. She is easily wakened. She has the aspect of diseased hens. Another hen, sick, inoculation the day before, and which will be dead to-morrow, is placed alongside of her. It is difficult to say which is the sickest, though the second sleeps the soundest.

1:30 P. M.: Always sleeping. Head heavy and drooping; body in a ball; immobile; does not eat; awakes readily.

2 o'clock, P. M: Same condition. Sometimes raises her head; opens her eyes as if waking from a dream.

3 o'clock, P. M.: Regains her vivacity; begins to eat; carries her head up; no more sleepiness; dresses her feathers. It is all over. Nothing else particular to observe. Perfect health. The effect has lasted four hours.

results, and as in each I had been careful to verify that an extract of pure bouillon, where the microbe had not been cultivated, did not give rise to similar manifestations, I am convinced that during the life of the parasite, it produced a state of narcotation or stupefaction which simulates the morbid phenomena so well marked as the sleep in chicken cholera. It is by the performance of its acts of nutrition that the microbe produces the gravity of its disease and brings on death. It is easily understood. The microbe, indeed, is ærobic; it absorbs during its life large quantities of oxygen, and consumes many of the elements of its medium of culture, a fact of which one can be easily convinced by comparing the extracts of the bouillon of chicken before and after the culture of the small organism. Everything shows that this oxygen, essential to life, is taken from the blood globules through the blood vessels; and the proof is, that during life, and often also when approaching death, the combs of the sick animals are seen to become bluish, when the microbe is not yet in the blood, or if so, are there in such small quantities that it escapes all microscopical observation. This mode of asphyxia becomes peculiar, then, to the disease, if it cannot be attributed to a circulation rendered difficult by the diseased process itself.

The animal dies, however, from the deep disorders resulting from the culture of the parasite in its body; by the pericarditis and other serous exudations; by the alterations in internal organs; by the asphyxia: but the act of sleeping corresponds to a product born during the life of the microbe, acting upon the nervous centres. The independence of the two effects in the symptoms of the disease, is again established by the circumstance that the extract of a filtrated culture puts to sleep also hens vaccinated to *the maximum*. I will endeavor, however, to isolate the narcotic, and ascertain whether in a certain dose it will not kill, to learn further if, in that case, death will be accompanied with the internal lesions of the disease itself.

These facts will no doubt stimulate further pathological investigations.

Notwithstanding the length of this paper, will the Academy allow me to present briefly a few other peculiarities of the disease under consideration?

As we are aware, it is a terrible and rapidly fatal affection, specially by the direct inoculation of its microbe. It then becomes remarkable that at times it assumes a chronic character; indeed, in some cases, hens are seen which, having been inoculated, after being very sick, do not die, and recover a relative degree of health. Still, they eat little, become ædemic, as proved by the discoloration of their combs; become more and more lean and finally die, after weeks or months of languor. This fact would have been of secondary importance, if in those peculiar circumstances, the microbe was not most generally found in the body at the time of death, proving conclusively that the parasite had been preserved in the animal from the period of the last inoculation, always present and active, though acting quietly and unobtrusively, and surely, though slowly. It destroying its victim, no doubt, remains lodged in some vaccinated region, which becomes unfavorable, by those conditions, to an easy culture. Vaccinated hens principally present this form of disease, which, in truth, however, is not of frequent occurrence. One might suppose that, in these conditions, there would be transformation of virulent into attenuated lymph, but this would be an error. In those cases, the virulency of the microbe is, on the contrary, very great, as can be seen by taking the blood of the hen killed by way of cultures and inoculating it to fresh birds.

Such facts will help us to understand the possibility of those long incubations of virus (that of hydrophobia, for example) which after remaining in the body, in a partially latent state, manifest their presence suddenly, at length, by the most manifest virulency or death.

Will they not also enlighten human pathology? Alas! do we not often see diseases of the order of virulent affections, such as measles, scarlet fever, and typhoid fever, taking on the most serious results, protracted, disastrous, and often incurable? The circumstances I have mentioned are of the same nature, but here we can see their true cause. I conclude by noticing another peculiarity no less interesting to scientific men.

In very well vaccinated and very healthy hens, an abscess sometimes appear, on some parts of the body, full of pus, but

which does not seem to trouble the health of the animal. It is remarkable that the abscess is also due to the microbe of cholera, which is there in a state of preservation, but unable to propagate; no doubt because the hen is vaccinated. It can be separated from the pus of the abscess by culture or by inoculation to fresh hens, which it kills, after developing itself in the ordinary way in the region inoculated. These facts remind us forcibly of the abscess of the Guinea pigs of which I spoke in my last communication, and gave for those a rational explanation. It is very likely that as the muscles of the pigs cultivating the microbe more slowly and with more difficulty than those of hens, the disease limits itself to an abscess accordingly, and recovery becomes possible.

I fear to abuse the patience of the Academy by continuing longer, and feel it my duty to bring my remarks to an end, for the present. The subject is so serious and important, that I will request permission to postpone to future lecture, the *compte rendu* of other observations which I have collected, or may collect. Lavoisier has said, "Nothing would be offered to the public, if one would wait to have reached the end of the field which successively presents itself, and which seems to extend as one advances to investigate it." And again, it will not be without utility for me, if I am enlightened by the judgment of competent men, and thus subjected to a certain control which must confirm and enlarge these researches.

STUDY ON CRIBBING—CAUSES—MEANS OF PREVENTION AND CURE.

BY M. CH. MARTIN.

(Continued from page 97.)

To place the straw, the hay and the oats in a box on the ground, at the feet of a cribber, is a good way to keep him from cribbing, and as simple as it is old, but it has its inconvenience; much of the food is soiled and lost, as the animal refuses then to take it.

I have devised a hay-rack and manger which removes these objections. It is a rectangular box, 1 meter 30 centimeters long, 60 centimeters wide, and 25 degrees high. A hay-rack is the cover, and fixed to it by hinges; its superior border is not above 50 centimeters from the ground of the stable.

When the cribber is taking his food from this hay-rack, he first tries to crib, but having a *point d'appui* too low to allow a muscular contraction sufficient to lower the pharynx, aspiration of the air becomes impossible. Again, when he wishes to eat, to take hold of his food, he is obliged to execute movements of the head *upwards*, and we know that cribbing is possible only with movements *downwards*.

Thus placed, the cribber loses by degrees his bad habit, as the rack is too low, and also because he is obliged to return to the *normal prehension* with movements *upwards*.

This motion is not exactly vertical; most animals perform sidewise, with an ascending curb.

This rack is then made, with the required conditions to (1) prevent, (2) cure, (3) make cribbing impossible.

1. *Prevent.*—All who have raised or observed horses, consider with reason, the horse which licks or bites the manger, as having a pre-disposition to cribbing; this animal attached to the hay-rack in question, may yet lick it, try to gnaw it, but certainly he cannot crib.

(2). *Cure.*—The horse who cribs since some time, either in taking hold of the straw or in resting his head, will, whatever his age may be, lose also this vicious habit, after having for several months fed from this hay-rack.

(3). *Make it impossible.*—Tne old cribber will try to find a rest, and not finding it, will lose the habit.

XI.

Colts raised in the stable often crib at fifteen and eighteen months. A breeder showed me one which cribbed at eight months, and had begun when but six; he had, after being weaned, been placed in a stable where the manger was arranged for a horse of ordinary size.

Like a bad example, cribbing is contagious, the contagion of imitation. With ordinary mangers and racks, though the ration may be plenty, if for several months young horses are placed alongside an old cribber, three times out of five they will become cribbers also.

Cribbing is not transmitted by heredity; I have seen for about twelve years at the same breeder's, two stallions—a bay norman and a black percheron—both confirmed cribbers. Both had about fifty colts, and none became cribbers. However, cribbing is not a morbid consequence of disposition or of constitution, but only, in most cases, of badly disposed hay-racks or mangers, or of the insufficient size of the alimentary ration.

It is evident to any one who has often and attentively observed horses which begin to crib, especially in eating straw, that this aspiration of air takes place first *unknowingly;* that they are *unconscious* of this act, and *surprised* by the new sensation of the passage and rush of the air in their pharynx.

It is very probable that this sensation is *agreeable*, for they attempt to renew it, so that animals which at first cribbed twice in fifteen minutes, in a few months will do it ten or fifteen times in the same period. When the habit is at this point, if the object upon which the animal takes a *point d'appui* is taken away from him, he will look for another, and will find it. Then cribbing is *a thoughtful act*, and the horse which begins to crib in taking hold of his straw, ends by doing it with hay, with oats, and when his food is all ate, with the manger and the hay-rack. The sensation that the horse has in cribbing must be that of an agreeable coolness, for the temperature of the air which passes slowly to the pharynx during the normal respiration has raised in passing through the nasal cavities, while the air aspired through the mouth has not had sufficient time to become warm. It is a sensation of coolness analogous to the one we have when we suddenly ingurgitate air.

XII.

The cribber which begins in ingurgitating air, soon finishes by swallowing it. It is then only under the influence of this gas

in the stomach and other intestines, that digestive disturbances appear—meteorism, tympanitis, leanness and debility of the subject.

The intensity of this meteorism, its rapid appearance, are the effects, not only of the quantity of swallowed air, but also of the dilatation of this gaseous compound, produced by the elevation of the temperature of the organs into which it is accidentally introduced. The colics caused by cribbing end generally by the expulsion of gas through the anus; sometimes, however, one is obliged to have recourse to puncture of the cæcum, and it is of common observation that old cribbers die always with tympanitis.

It is not my intention to speak here of the different halters, collars, &c., used against cribbing; nor of the different mangers or racks, movable and rotating, which have been recommended, their advantages and objections being already known; and again they generally are but of temporary relief.

Hertwig has sometimes divided the tendons of the two sterno-maxillaris at their insertions, and says that he has cured cribbers by it. Gerlach is said to have cut the subscapulo hyoideus with success. To prevent cribbing, the sterno hyoideus and thyroideus ought to be divided and thus prevent the lowering of the pharynx —I have not yet performed the operation and ask myself if that section would not seriously interfere with pharyngeal deglutition.

EDITORIAL.

STAMPING OUT PLEURO-PNEUMONIA.

It is a little over fifteen months ago that pleuro-pneumonia was officially announced as prevailing to an alarming extent in the United States, and that steps were being taken to check its progress and complete its eradication. Commissions were appointed by several of the Eastern States; laws were passed by the respective Legislatures; funds were granted more or less liberally; State Veterinary Inspectors were set to work, and the whole machine seemed to be set nicely in motion towards securing the

required result,—the stamping out of the disease. There is no doubt that a great deal of this activity originated as a consequence of the attitude assumed by European governments, which resulted in the embargoes on American cattle going abroad; perhaps more so than from the fear of the possibility of the disease spreading further west than it was known to exist. What has been done and what were the prospects of successful results, are already known, and specially for the State of New York, where the well-organized veterinary staff did as good work as could be expected from its officers.

But prospects are sometimes doubtful, and it seems, are to be such, principally in our great country, where political influence has so much to do. Indeed, what has taken place for the last few months? The laws passed fifteen months ago have, in one case, been repealed, the supply of funds has been refused in another, and all the veterinary staffs have been discharged, and the work so well begun, which was so promising of good success, is now in the hands of the State or of the City Boards of Health, in none of which, as far as we know, a veterinarian occupies an official position, for that or any other purpose.

What can now be expected? What results can we look for? Health Boards are generally complaining that their funds are limited, that they cannot employ experts, though they acknowledge their usefulness; and still our wise legislators want them to handle that terrible scourge with the means now at their command.

All who are acquainted with pleuro-pneumonia, with its insidious character, its sometimes obscure manifestations, and the means necessary to check its spreading, will laugh at this last action of our State government, and tremble at the fearful prospects which threaten us, if the disease should reach our western districts; which, we fear, will sooner or later be no more a question of possibility, but a matter of fact.

We, however, as veterinarians, cannot do much but protest. As veterinary surgeons, a magnificent opportunity presented itself, to show the usefulness of our profession, and if failure stares our people in the face, the veterinary profession, at least,

cannot be blamed for the unsuccessful result, whose awful complications will one day follow.

We have yet one hope, and that is, that the Department of Agriculture will continue the work it has already begun, and that, wiser than the State governments, it will take measures which will deliver us from the presence of that terribly dangerous scourge.

BILL TO REGULATE VETERINARY MEDICINE IN NEW YORK STATE.—ITS FAILURE TO PASS.

A bill to regulate the practice of veterinary medicine was introduced, last year, in the Legislature of the State of New York, and, as our readers know, failed to pass. Taken up this year from the pigeon-hole where it had been placed, it was again presented, and again met with the same fate.

Noticing this second failure, the *Medical Record* says, "This could hardly be expected otherwise, as it was a somewhat premature measure. It is well to encourage all proper measures for elevating the standard of veterinary medicine, but the practitioners of this art are not yet, as a rule, sufficiently advanced in education or scientific attainments to need the protection of legislation."

Veterinarians of New York, what can you say to this? The *Medical Record* has told you what it believes to be the truth, and you have no one to blame but yourselves for the allusions made in those few lines. We know that you will deny the allegations made by the *Record*; we know that many amongst us are as advanced in education and scientific attainments as many members of our sister profession, but how have we shown it? When have we placed it on record? Can we point at anything that will reflect advantageously upon us? Can we show any scientific work or investigation of which any of us can be proud? And is it not time that, while attending to the daily labors of ordinary practice, you should do something which would wipe out from the scientific men of your State the sad impression that they have of your scientific qualifications? Let us do this; let us show to the medical profession, at least, that there is amongst us something

else besides the question of pecuniary returns; that we are possessed, as well as medical men generally, of scientific ambition. Let us show it by our work,—work with the pen,—at our meetings, in our Societies, and we are certain that the human physician will be the first to tender us assistance, and help us to obtain that recognition which we desire and deserve, which we will obtain in time, but of which we have not yet shown ourselves worthy.

NOTICE.

As a last notice, we would remind a few of our readers who are three years in arrears for the settlement of their subscription to the REVIEW, that after this number the journal will not be sent to them, unless their dues come forthwith.

BELGIAN VETERINARY CONGRESS.

A national congress of veterinarians is to be held on the 8th of July at Cureghem les-Bruxelles, to celebrate the fiftieth anniversary of national independence. The congress will last three days, and will be occupied with the discussion of professional subjects. Among the principal questions will be, 1st, Veterinary Deontology: 2d, The Inspection of Alimentary Animal Products; 3d, The Legislation of Redhibitory Vices (Veterinary Jurisprudence); 4th, The Organization of the Civil Veterinary Service.

Invitations have been sent to veterinarians of Europe, and even of America, and we have no doubt this congress will mark an epoch in the annals of veterinary medicine. We regret very much our inability to take advantage of the kind invitation we have received, and wish our Belgian colleagues all the success they may desire.

STAMPING OUT PLEURO-PNEUMONIA IN NEW YORK.

By James D. Hopkins, D.V.S.

Inspector on General Patrick's Staff.

The law under which the recent attempt to stamp out contagious pleuro-pneumonia in the State of New York was made, was enacted by the Legislature in 1878, but remained a dead letter until the commercial interests of the country received a blow, through the action of a foreign government, taken in order to save themselves from an invasion of this pestilence. Our government cannot plead ignorance of the insidious enemy in our midst, as they have received repeated warnings from the veterinary profession and press.

An article by Prof. James Law, that was published in the New York *Weekly Tribune*, Nov. 27, 1878, calling attention to the wide spread of this "lung plague" into the States south of New York, and especially into the District of Columbia, was widely copied, both in this country and England.

A cargo of cattle shipped from Portland, Me., on arriving at Liverpool in the January following, was condemned as being affected with contagious pleuro-pneumonia, which led to special inquiries by the English government, who appointed Prof. McEachran, of the Montreal Veterinary College, to investigate.

Prof. McEachran's report that the lung plague existed in Washington, Philadelphia, and Brooklyn, was followed early in February by an order of the British Privy Council that all American cattle should be slaughtered immediately on their arrival at English ports.

On the 6th of February Gov. Robinson commissioned Prof. Law, of Cornell University, to investigate the reports of disease in Kings and Queens Counties, and on the 10th Prof. Law having made his report of the presence, existence and dangerous character of the disease, the Legislature made an appropriation of

$10,000 to meet instant expenses in carrying out the provisions of Chapter 134 Laws of 1878, for stamping out this pestilence.

The Governor, acting on Prof. Law's report, issued an order to Sheriff Rushmore, of Queens Co., to quarantine the cow stables of Gaff, Fleischmann & Co., at Blissville.

On the 12th of February, Governor Robinson appointed Gen. M. R. Patrick to take charge of the work, and Prof. Law as his veterinary adviser; and on the 13th operations were commenced in Brooklyn. A veterinary staff was organized, and the slaughter of diseased and infected cows began in the Blissville stables, 879 cows, of whom 64 had the disease and were killed on the premises, and sent to the offal dock, and the balance—815—were sent to the butcher.

This prompt action of the State caused much excitement, not only among cattle men, but in the public mind generally, which was fanned by the wild and extravagant reports of newspaper men.

To prevent cattle from Brooklyn and adjoining infected towns being removed to the eastern end of Long Island, hitherto free from disease, Mr. J. Howard Rushmore, Secretary of the Queens Co. Agricultural Society, was placed in charge of the three eastern towns of Hempstead, North Hempstead, and Oyster Bay, and Mr. Benj. Albertson in charge of the three adjoining towns of Jamaica, Flushing and Newtown, with orders to allow no movement of cattle from the western part of the Island toward the east.

On the 31st of March work began in New York, arrangements having been made to inspect all arrivals of store cattle at the Union Stock Yards and steamboat piers. Inspections of the cow sheds of New York and Brooklyn were commenced, as well as in the towns of Kings and Queens Counties. All railroads terminating in the cities of New York and Brooklyn were prohibited from unloading any cattle, except at certain designated places, from which no milch cow, calves, or store cattle could be removed without a permit, showing inspection and bearing the autograph of M. R. Patrick, given by the Inspector detailed for that duty.

Steamboats, barges, and all other means of conveyance were prohibited from receiving on board, or landing cattle within any of the infected counties. All ferries between New York and New Jersey were prohibited from carrying milch cows or store cattle, except by special permit,—arrangements having been perfected between Gen. Patrick and the State Agent of New Jersey, Gen. Wm. H. Sterling, for the inspection and transfer of such family cows as, in the opinion of experts, could be done without danger.

Our work was most heartily endorsed by the Board of Health of each city, and the police were efficient in carrying out the quarantine orders. In New York, the authorities enforced our rules and regulations for controlling the traffic and movements of cattle, as well as the prohibition against pasturing on the commons. In Brooklyn, those in authority released the cows from the pound, and by a resolution of the Board of Aldermen the pound was *abolished*. The police magistrates declined to recognize the law, although instructed by the District Attorney as to its validity and requirements. A resolution of the Board of Aldermen gave permission to the people to graze their cattle on the commons, and the Mayor of Brooklyn, when called upon by Gen. Patrick with copies of the law and the "pasturage order," with a request that he would examine and report upon them, remarked that, as the resolution of the Aldermen was in opposition to the requirements of the *State Law*, it must be inoperative; but, although he did not approve the resolution, he did not veto it, and it became an ordinance. Permits were also given by some of the Aldermen for the moving of cattle upon the streets, in direct opposition to both the letter and the spirit of the law. Notices were served upon them by Gen. Patrick, and actions were commenced before the police magistrates for violation of the State law, but the excitement of a political canvass and coming election seemed to nullify all efforts to obtain decisions, and the work in Brooklyn has been greatly obstructed ever since. The police, under such circumstances, were powerless to render the aid which they had hitherto been prompt to give.

Through the summer months of 1879, the work of inspection of cow sheds and dairy farms of New York and suburbs, and the

destruction of diseased and infected animals, was pushed forward with great energy, additional veterinarians having been added to the staff for that purpose.

The centralization of the business of the cow trade at the Union Stock Yards, in the beginning of July, 1879, and the stringent orders prohibiting dealers keeping cows on sale elsewhere, was the result of tracing outbreaks of disease in cow stables, hitherto free, to the dealers' stable and their pernicious traffic in diseased cows.

Rumors of disease reached our office about May 1st, 1879, of cattle dying in the eastern part of Suffolk county, (Long Island), and Prof. Law at once proceeded to that locality to investigate, and found that a dealer named Billard had bought a lot of calves, (110), some at the Union Stock Yard, New York, but mainly in New Jersey, and taken them to Suffolk county, where he peddled them about among the farmers, mostly of Southampton, Bridgehampton, and Easthampton in lots of three to fifteen. All the sick animals examined by Prof. Law belonged either to the Billard animals themselves, or to those which had been brought in contact with them.

Chas. S. Rogers, Esq., of Segg, was placed in charge of the towns of Easthampton, Southampton, and Brookhaven, to carry out the provisions of the law under Gen'l Patrick's directions, assisted from time to time by a Veterinary Inspector from the General's staff.

The United States authorities at Washington have issued stringent orders in regard to foreign importations; requiring all cattle from the British Isles to be held in quarantine ninety (90) days, but providing no quarantine ground nor facilities for carrying out the Treasury instructions. Such cattle, under such circumstances, were landed in New York, and, for our own safety, the State authorities were at the expense and trouble of holding them in quarantine at the farm of the importer.

Finding that there was a disposition to take advantage of the facilities given at our office for imported cattle to pass into the interior, *then* to be quarantined, Gen. Patrick notified the Secretary of the Treasury that he would decline hereafter to assume

any responsibility in regard to the quarantine of animals that might come into port, and urged upon him the establishment of a suitable quarantine station, near Sandy Hook, on the unoccupied ground of the United States reservation. In accordance with these suggestions, the Secretary desired the New York Commissioner to examine the reservation on Sandy Hook, to select, if practicable, proper grounds for the establishment of a quarantine; but, at the same time, indicating his opinion that the quarantine should be established and maintained by the State of New York. (Up to this time no further action has been taken).

The number of cattle which had been condemned and slaughtered, in accordance with the law, for which indemnities were given, with the large outlay for professional services, had so reduced the appropriation made by the Legislature, that by the close of August, 1879, it became necessary to largely retrench the expenses, which could only be done by reducing the number of veterinarians, retaining only a sufficient force to hold the ground already gained and continue the inspection of all animals coming to the cities, until such time as the coming Legislature should be able to take the subject into consideration.

The great importance of continuing our restrictions placed upon the importation of cattle from the States south of us, in which the disease is known to exist, will be seen at a glance, as the work we have already done in our own State would be lost were these restrictions removed, inasmuch as the tendency of all cattle trade is toward the city of New York.

On the 9th of September, notice was received by Gen. Patrick of the appearance in Putnam county of some fatal sickness among the cattle, and Prof. Law soon visited certain herds in the town of Patterson, and the existence of contagious pleuro-pneumonia in a virulent form was established.

The fact that the appropriation made by the Legislature at its last session, to carry out the provisions of the laws of 1878–9, was so nearly exhausted as to render it impossible to indemnify the owners of cattle that would be condemned under the law, was made known to the people of Putnam county, who at once called a mass-meeting at Brewsters, October 7th, 1879, to consider the

situation. The main business in Putnam county is the production of milk for the New York market, and the present invasion of a contagious disease among their herds, threatened ruin to a prosperous people, so that when the hour of meeting arrived the representative men of the county were present, and after a discussion of the ways and means of raising the money required to indemnify owners of condemned cattle, a resolution was passed that the Board of Supervisors raise the necessary funds and that the work should be carried forward with energy and dispatch.

Next day the Board of Supervisors had a meeting, and by their official action confirmed the wishes of the people.

Sheriff Doam, of Brewsters, was placed in charge of the work, and with the aid of a Veterinary Inspector from the General's staff the slaughter of the diseased and infected herds was vigorously pushed forward, and the county saved from the threatened invasion.

In the northern and western parts of Westchester county, a number of herds were found infected with the lung plague, all of whom were slaughtered and the buildings disinfected.

Up to May, 1880, only one herd of cattle had been found infected on Staten Island, and by their prompt destruction and the failure to find more after a thorough inspection, the Island was regarded as free of disease. On May 12th, notice of sickness in a herd at Stapleton, S. I., was reported and although the herd was destroyed at once, great anxiety is felt in the vicinity by the owners of cattle, as this infected herd had pastured on the commons with nearly three hundred cows belonging to different owners. Staten Island offers as good a field for the propagation of contagious pleuro-pneumonia as the suburbs of Brooklyn. Here, thousands of acres of commons invite the small dairyman to settle, because of its proximity to New York, and though but little grass can be had, the large number of breweries furnish abundant food of its kind.

The number of cattle that were found sick with the disease up to date, killed and paid for by the State, is 765; and the number examined by our inspectors, 68,746—this does not include the re-inspections.

The number of cattle (infected) killed by the owners, no expense to the State, (except quarantine), 1,460.

Total amount appropriated by the Legislature for this purpose, $65,000.

The number killed in each county:

Kings	92
Queens	148
New York	149
Suffolk	75
Westchester	97
Putnam	196
Richmond	8
	765

In stamping out contagious pleuro-pneumonia in New York and Brooklyn, both cities were declared under quarantine, and by law it was made a misdemeanor to move a cow on the streets without a permit bearing the autograph of M. R. Patrick, the police being charged with the enforcement of the law.

No fresh milch cows or other store cattle were allowed to enter the infected district, except from known healthy localities; and for the purpose of having full control of all cattle on arrival, a suitable yard was provided at 59th Street and North River, at which all steamboats, barges, and railroads, carrying store cattle, were compelled to land their stock for inspection and distribution, all cows going direct to the dairies, or from the dairies to the slaughter-house, no dealers being allowed to keep cows on sale elsewhere.

At the same time, an inspection of all cow stables in the infected district was made, and an Inspector made a post mortem examination daily, at the offal dock, of all horned animals gathered by the offal carts.

At the slaughter-houses, an Inspector was in attendance daily, to examine all dairy stock sent there as beef; and, to encourage the owners of cows in reporting at the office any sickness in their herds, as well as to outbid the dealer, a liberal indemnity was offered. When *sick* cows were found in New York or Brooklyn,

they were promptly slaughtered, and the balance of the herd closely quarantined and fumigated daily with burning sulphur, and the buildings thoroughly disinfected. We have found that this treatment, when properly carried out, checks the spread of the contagion to those animals not yet affected, and is more efficacious than inoculation, for the suppression of the plague. But, if other herds, by this process not being done properly, were endangered, then the whole infected herd were at once sent to the butcher. On farms in the country, where only a fence separates the cattle, immediate slaughter of sick and exposed is the price of safety.

Inoculation was introduced twenty-nine years ago by Dr. Williams, of Belgium, as a prophylactic of this plague, but, after a thorough investigation in Europe, it proved unreliable. Almost all advocates of inoculation deny that an inoculated animal is at all dangerous to others. In this they throw the gravest doubt on the value of the operation as a preservative. The liquids inoculated are the virulent products of the lung plague, and as these do not induce disease of the lungs but only of the tissues where they are inserted, it cannot be supposed that they exert any influence on the economy through any direct action on the normal seat of the disease. If protective at all, it must be by reason of the reproduction of the germs in the blood, or in the seat of inoculation. If in the blood, there must be danger of their being given off by the various free surfaces, and notably by the lungs. Reymal mentions the case of an inoculated cow at the Alfort Veterinary School, which infected two others standing with her. In a stable near Williamsbridge, Joseph Schwab keeps a herd of eighty milch cows, and has practiced inoculation for years, with good results, but last summer Mr. Schwab bought a fine young bull, which he thought he would not inoculate. Ten weeks later the bull died of contagious pleuro-pneumonia. Again, Mr. W. J. Robinson, of Putnam Co., with a herd of forty head, declares that no sickness had occurred in his herd prior to our visit, but, in the excitement of the outbreak of the lung plague in that county, he had eight cows inoculated. Two died from the inoculation, and a few months after,

he sent his remaining herd to the butcher, where one of the Inspectors found one with the lesions peculiar to this disease, when killed.

Reason and experience agree in showing that the poison may be thus introduced into healthy stables, and therefore *inoculation must be absolutely condemned* whenever a speedy and effectual *stamping out* of the disease is desired. No country has ever succeeded in exterminating this plague by practising inoculation. The most ardent votaries of the practice, Belgium, Holland, Prussia, England, Australia, South Africa, New York, and New Jersey have preserved the plague for decades in spite of the most earnest efforts of this kind.

Let no one delude himself with an idea of similarity to vaccination for small-pox. In the Jennerian vaccination it is a mild, safe disease (cow-pox) that is conveyed, and the vaccinated individual can never become the center for the diffusion of small-pox. But in lung plague it is the virulent matter of the disease itself that is inoculated, and the process would find its counterpart in the inoculation of the infant with genuine small-pox virus. By this a mild small-pox would be produced which the majority of infants would survive, but in the clothing, air and buildings would be scattered the virus of small-pox, that would prove infecting to all susceptible people.

For generations the means of successfully arresting the ravages of this pestilence have engaged the best veterinary talent in Europe, and the results of their observations have been placed on record for the guidance of the profession; and the Legislature of the State of New York, in enacting the law that called the Commission into existence to "*stamp out*" contagious pleuro-pneumonia, did so after mature deliberation and consultation with some of the *best cattle pathologists* in the world. They early recognized that such an extensive country as the United States cannot afford any palliative measures, that will expose forty millions of cattle to this dread scourge; hence the law to *stamp out*.

To stamp out contagious pleuro-pneumonia in a locality where it has existed for years, is no slight undertaking, and opposition may be expected from people whose interests will be interfered

with; but to see the authorities of a city hinder the operation of a State law, and pander to the wishes of their constituents, looking for future suffrages, shows to what depths politicians will descend to secure success.

But regardless of the difficulties that have beset the Commission, the work went steadily forward while the money was forthcoming to indemnify the owners of condemned cattle, as the law required; and it is to be regretted, that a short-sighted policy on the part of the authorities, in their failure to provide the required funds, has brought the aggressive work in the stamping out of the disease to a stand-still.

It would have been better never to have expended a single dollar, than to thus ingloriously abandon the field after so much good work has been done, and the fact had been so clearly demonstrated that the undertaking would be successful.

As the Legislature adjourned without making the necessary appropriation for the continuance of the work, Gen. Patrick was compelled, on the 1st of June, to disband the veterinary staff.

We are glad to be able to record the fact that, at the time of disbandment, Putnam, Suffolk and Westchester counties were cleared of contagious pleuro-pneumonia.

New York has two herds under quarantine; Richmond Co., (Staten Island), I have already spoken of; Brooklyn (Kings and Queens counties), has been benefitted and the disease confined to that district between Jamaica and Prospect Park and the East River. Gen. Patrick will keep the quarantine in full force, and with the aid of the New York Board of Health and Metropolitan Police, enforce the law and prevent the re-stocking of our dairies by unscrupulous dealers with diseased cattle from New Jersey and Pennsylvania, until the next meeting of the Legislature.

The veterinary profession will feel gratified to know that the Commission has, in the prosecution of its labors, met with the heartiest good-will and assistance from the medical profession whenever called upon, and we are glad to bear witness to the deep interest taken by many eminent practitioners in their untiring research, as evidenced by their continued attendance at autopsies and inspection of cow sheds.

Gen. Patrick, in accepting the direction of this movement, brought to the work mature experience of contagious diseases of cattle, and in the organization of details exhibited a thorough knowledge of the necessities of the occasion and rights of individuals; and now, at the close of the services of the veterinary staff, instead of reporting only a partial, we should have been able to have reported *complete success*, had the required funds been promptly advanced at the proper time.

The State recognized the claim of the veterinary profession in calling her accomplished son, Prof. James Law, to direct the professional part of the work; and to his ability, faithfulness and large experience in dealing with the disease in Europe, much of the success attained is due.

Also, great credit is due to Prof. Liautard, Dean of the American Veterinary College, who, when a few mercenary veterinary surgeons in the interests of the cattle owners at Blissville denied the contagious character of the malady, by his experience and thorough investigation (including many autopsies) aided the Commission and gave to the public a complete exposé of the attempted imposture.

The veterinarians who have served on Gen. Patrick's staff, feel a just pride at the success they have met with in their difficult work, and deep regret at its abrupt halt.

In writing this report, I have to thank Gen. Patrick and Prof. Law for the use of their report to the Legislature, from which I have largely drawn.

PERSONAL INTELLIGENCE.

Mr. C. P. Lyman, Veterinary Surgeon, attached to the Agricultural Department in Washington, sailed for Europe on the 23d of June, in the Cunard steamer Abysinia. A part of the mission of the Doctor is to obtain information regarding the reports which have come from abroad, of the existence of contagious

pleuro-pneumonia in American cattle exported to England, and if possible to trace it back to the place of its origin in the United States.

Dr. Walter H. Hornblower, lately graduate at the American Veterinary College, has received the appointment of Veterinary Surgeon in the 6th Cavalry, United States Army, now in Arizona.

Dr. L. T. Bell, graduate of Veterinary Medicine at the N. Y. College of Veterinary Surgeons, and American Veterinary College, received his degree of M.D. on the 23d of June, from the Long Island College, N. Y.

Prof. A. A. Holcombe, D.V.S., has officially resigned his position of Adjunct Professor of Surgery in the American Veterinary College.

PROSPERO.

THE HISTORY OF HIS DISEASED CONDITION WHEN VISITED ON THE 6TH OF JUNE, 1880.

BY A. LIAUTARD.

The interest attached to this valuable horse, the various reports of his death, (afterwards contradicted), and the erroneous accounts of his sickness, make it obligatory for me to offer to the profession a statement of what I know of his previous history, and of the condition in which I found him on the day of my visit.

Like great men, great horses are objects of universal interest, and like them also, their published obituaries do not generally anticipate their death. But, as with but few men, Prospero has enjoyed the distinction of an obituary notice while yet alive.

Some time in May, I received from Dr. Miller, of Camden, a letter informing me that Prospero was sick; that his trouble was

supposed to be purulent collection of the sinuses, and asking for advice as to the manner in which the operation of trephining ought to be performed; that a tooth had been pulled out already by a veterinary dentist; that this proved to be healthy; that the owner was not aware of this fact; that Mr. Parks was to call on me; that I was not to tell him about it; and that an early reply would be appreciated, as it was an interesting case, and Dr. Miller was anxious that the other veterinarians of Philadelphia should not have a chance to treat him.

Thinking that the first duty in the matter was to inform Mr. Parks of the extraction of the healthy tooth, before attempting any further treatment, and that Dr. Miller or the owner would call on me, the letter was put aside and left unanswered.

About the 2d of June I was called upon by Mr. Parks, and learned from him what he supposed to be the condition of the suffering animal: being the first intimation I had received, that such an operation had been performed. He asked me to see the horse and report his condition, with a view to his immediate destruction if I considered him beyond cure.

Accordingly, on the 6th of June I went to Philadelphia, and was kindly met at the depot by Dr. Miller, who drove me to the stable where Prospero was kept.

The day following my visit, I reported to Mr. Parks, who was absent from his office, and for whom I left *a letter* with a statement of my diagnosis and advising him to have the horse put out of his misery. Subsequently an order was received from him to destroy the poor animal, with directions to have his body, or such portions of it as might be of interest to the examiner, sent to the American Veterinary College.

Obituary notices were forthwith published in the daily papers in New York; the history of his life appeared in *Turf, Field and Farm*, and the report was widely circulated that Prospero had been killed, being affected with big head, or osteo porosis. This was followed by another report, in which it was said that an error of diagnosis had been made; that the animal had only carious teeth, which had been operated upon, and that, I supposed, he would recover, as otherwise what would have been the use of

this last operation, which consisted in the removal of three molars, two of which were much diseased.

I received a few days ago a letter from Dr. Gadsden, of Philadelphia, telling of his surprise at my diagnosis of big head —an erroneous impression which he received from Dr. Miller and the reports in *Turf, Field and Farm.*

On the day of my visit, the animal presented the following conditions: Prospero was in a box stall, as comfortable as possible; his face, on the right side, presented a large swelling, somewhat diffused, yielding to pressure, involving the superior maxillary bone, extending upwards to the lacrymal and zygomatic. The skin showed large veins running underneath and had two openings where the trephining was performed, from which a bloody, serious and very offensive discharge was running. The finger, introduced through the wound by Dr. Miller, penetrated into the sinuses, and when withdrawn was loaded with the peculiar odor so characteristic of necrosed bone. On examination of the mouth with a speculum, a large fungoid granulation was visible, protruding between the molars at the place of the extracted tooth. The posterior molars were diseased. The palatine plate of the maxillary and the alveolar cavities were more or less exposed, and the fingers which touched them carried with them the peculiar odor already mentioned. There was a discharge from the right nostril, of the same character as that of the wounds of the face. Dr. Miller had told me of his operation; quite a severe hemorrhage had accompanied it, and if my memory serves me, stated that from the moment he opened the sinuses he thought he had something more than a secretion of pus in those cavities.

In the presenee of these symptoms, I made a diagnosis of osteo sarcomatous degeneration of the face, brought on by carious teeth, and probably stimulated by the improper extraction of the healthy molar. I made my diagnosis known to Dr. Miller, who stated that he thought so from the moment he had operated, as he had felt it to be like what he had commonly met with in cows. I repeated this diagnosis to Dr. Zuill, whom we met as I was returning to the railroad depot. I also stated it to the students of the American Veterinary College, on my return to New York,

and I wrote it to Mr. Parks, who I understand has my letter yet in his possession.*

How, in the presence of these facts, was the "big head report" accepted, even by professional men, who ought to have known better? I cannot explain it, unless for some who consider osteo sarcoma and osteo porosis to be the same disease.

The prognosis which I made was a serious one; yes, a fatal one, and time alone will show if I was too hasty in making it.

Here was an animal worth a large sum of money, as a trotting horse; as an ordinary horse, comparatively almost nothing. I weighed carefully his chances of recovery to usefulness, and have by experience learned that he had almost none.

The indications were to remove the diseased teeth and to remove also, if possible, the diseased bones of the face. This done, what would be the prospect? Would those alveolar cavities close up entirely? Was there not danger of food accumulating in the sinuses—and what then? I have had cases which have shown me the incurability of such lesions. But let us suppose that the cavities would have closed; what about the other lower grinders? Were they not likely to become at least a source of annoyance and of suffering to the horse? Would they not always require watching as to their abnormal growth and possible injury of the tissues above them? And what a life of misery, of starvation perhaps, for this noble brute, who had given so much pleasure to his owner! Was he thus to be rewarded, and for the sake of a few months of existence, be allowed to suffer for the remainder of his days? I thought not; I think so still. And as I stated before, time alone will show me that I was wrong, if by a wonderful recovery, by a natural work of repair the different and fatal results that I have already met in my own practice are to fail in their lessons.

*Since this writing, I understand the letter has been mislaid.

EXTRACTS FROM FOREIGN JOURNALS.

SURGICAL TREATMENT OF A TENDINOUS WIND-GALL.

Mr. Vanderwah having a tendinous wind-gall of the near hind leg to treat, used first a cantharidis blister, without satisfaction; he then tried the red iodine of mercury ointment, and failed again; and then employed aspiration with the instrument of Diculafoy.

Thirty grammes of synovia being removed, fifteen grammes of tincture of iodine were injected into the serous sac, and after five minutes were almost entirely drawn off (12 grammes).

The next day, high reactive fever; the temperature had raised 2 degrees; the seat of the operation was highly inflamed, much swollen and very painful.

These symptoms soon subsided, but the swelling remained for some time. A month later the lameness had entirely disappeared. Seven months after, the wind-gall was entirely removed.—*Iydschrift.*

RESPONSIBILITY AND TRICHINOSIS.

Mr. Heilemann, veterinarian of Berlin, found in the inspection of meat, some containing trichinæ. He took advantage of his discovery to give some of it mixed with healthy meat to a cat (very annoying to his wife). Eight days after the poor cat was very sick, and a couple of weeks later died. At the post-mortem only a few trichinæ were found in the muscles of the feline.

In relating this fact, Dr. Wekenkel wisely says: In performing this experiment, did Mr. Heilemann fully realize the possible consequences of his action? Did he lose sight of the fact that in trichinizing the cat, without submitting him to a special watch, he created the possibility of new infections, of which it may be difficult to see the possible sequelæ. For us, similar acts are unwarranted, and ought not to be allowed.—*Annales de Bruxelles.*

THE INFLUENCE OF FOOD UPON THE RECEPTIVITY OF RATS TO THE VIRUS OF ANTHRAX.

Mr. Feser had remarked that white rats, which he kept for experiments, remain, at certain times, refractory to the inoculation of charbon, no matter how active; while at others they would take it very readily. Mr. Feser cannot explain this except by the change of food—vegetable first and then animal—to which they were submitted.

During several weeks, some rats were exclusively fed with meat, and again some with bread only. These last all died after an inoculation of anthrax, while the former resisted unless they received a large quantity of virus.

A series of close observations was then started, in dividing the rats into groups and feeding them exclusively with such and such food. Inoculation made on the animals fed with meat entirely remained sterile; still, in injecting afterwards those rats with a large quantity (half a cubic centimeter) of strong virus from the blood of the heart of a cow, all died; the inoculation of three or four drops of the same blood was without results on rats, while it killed rapidly other animals, rabbits for instance. More than that, these rats fed with meat and resisting the virus, were then fed with vegetables, and six weeks later one drop only of carbuncular blood killed them in thirty-six hours.

It then seems to result from the above, that the nature of food has a great influence upon the disposition for contracting anthrax. —*Annales de Belgique.*

TRICHINA ON BOARD THE "CORNWALL."

A so-called epidemic of typhoid fever broke out some time ago on board the Cornwall. Several persons on board died. Dr. Power having made post-mortem of one of them, found that instead of an epidemic of typhoid fever, it was one of trichinosis, probably due to the eating of American pork.—*Revue d' Hygiene.*

CONTAGIOUS DISEASES IN PRUSSIA.

Anthrax—Was less frequent than last year. The losses have been 28 horses, 1,009 bovines, 654 sheep, and 171 swine. The number of affected districts was smaller also. The disease was most common toward the end of summer and in the fall of the year. Silesia furnished a quarter and Pomerania one fifth of the losses, which in some places broke out amongst deers and boars.

The cases were more numerous in some of the places where it had existed before, and it seemed demonstrated that certain fields had become true centers of infection because of infected cadavers buried there. The cases of transmission by inoculation were rare.

Twenty-five persons were infected and three died.

2d. *Foot and Mouth Disease.*—Comparatively to past year, this is less common. It was not found in more than 657 herds—most of them were in Silesia, Brandenburgh, and Saxony.

Inoculated animals had a mild affection with a short duration.

No bad effect of the use of the milk was observed.

3d. *Contagious Pleuro-Pneumonia*—Has spread some, and affected more animals. 2,090 animals were recognized as diseased; of these 86 died, 1,778 were destroyed by order of the authorities, and 234 at the request of the owners. 76 per cent. of the diseased animals belonged to Saxony, Brandenburgh, Pomerania and Hesse-Nassau districts. The results of inoculation were not positive.

4th. *Glanders and Farcy.*—The number of animals thus affected has been 2,073. Among those 122 died, 1,745 were destroyed by the authorities, 127 by request.

5th. *Small Pox*—Has been more frequent—out of 1,210 herds, preventive inoculation was practised—16,369 sheep died of this disease.

Statistics have proved that preventive inoculation is most often the cause of the different invasions of the disease, and that it is only in the districts were it is performed that the disease is stationary enzootic.

Preventive inoculation is not so extensively put in practice.

6th. *Maladia du Coit*—1,129 animals have been affected.

7th. *Scabies.*—Only 790 cases were observed.

8th. *Hydrophobia.*—Cases of these affections are less frequent in dogs and bovines, but more so in horses and in sheep. 474 dogs, 43 bovines, and 49 of each of the others died from the disease.—*Annales de Belzique.*

DISCOVERY OF VACCINE HORSE-POX.

The 5th of May, Mr. Alexander showed to Mr. LeBlanc a case of spontaneous *horse-pox* among the horses of Mr. Marx, on a well-bred horse from Germany. The vaccinal lymph was inoculated by M. Chambon upon a heifer three months old, by three punctures on the udder. These developed normally, and with their lymph another was successfully vaccinated on the 13th. The 19th, she exhibited a handsome vaccinal eruption, (60 postules). With the lymph of those, two heifers were also inoculated, and by them the service of vaccination of the society d'Hygeine will be well provided.—*Gazette Medicale.*

STERILITY DUE TO THE OBLITERATION OF THE OS UTERI IN A COW.

Twenty-six months old, she takes the bull, but remains sterile. When first seen by the author of the report, she had all the signs of health, in good condition, hair silky, nose cool; she was lively, had no nymphonia, became in heat every five or six weeks—this lasted two or three days. The empirics attribute this condition to a wart, and the clitoris had been cauterized with actual cautery brought to white heat.

On examination of the vagina, the hand being first well oiled, the os uteri felt of the normal size, but gave the sensation of a hard, somewhat fibrous cord; it was inextensible, and the entrance to the uterus was tightly closed. It took more than half an hour of manipulation before the end of the index finger could be introduced. The attempt to fecundate was always followed by failure. The cow was ultimately killed.—*Journal de Lyons.*

OBSTACLE TO PARTURITION BY OCCLUSION OF THE OS UTERI.

A cow was in labor for forty hours. When seen, she was standing up, the hind legs apart, the hocks flexed, the vertebral columns bend upwards; the animal was making continued efforts. A large, red tumor, bosselated, situated in the place of the vulva, was hanging down to the hocks; through its walls the head and legs of the fœtus were easily made out. The covering of this mass was the mucous membrane of the vagina, continued with the skin of the perineum and of the gluteal region. The opening of the vulva entirely disappeared and the neck of the uterus, situated at the lower part of the hernial sac, was but a small depression, scarcely half a centimeter deep. The walls of the neck, closely together, are so adherent that it is impossible to introduce either the finger or a small instrument to operate the dilatation. Everything has returned to its normal position, and the entire occlusion of the neck becomes more manifest.

With an ordinary bistoury a way was made for a blunt instrument, with which three incisions were made, two superior—one to the left and the other to the right—and the third to the lower part. As these were made, the opening dilated and the head of the calf was soon engaged in the pelvic strait and ready to come out. The success was perfect—calf and cow got well.—*Journal de Lyons.*

SALIVARY CALCULUS IN A FEMALE ASS.

A female ass, bought in 1875, had at that time a small tumor on the inferior part of the left cheek. This tumor kept on growing up to October, 1879, when it interfered with mastication; the animal refusing all food. She was in good condition, fat, and nursed a little foal four months old.

At the lower part of the left cheek she presented a somewhat round tumor, well prominent, about seven centimeters back of the commissure of the lips, and ten centimeters from the eye. Its contour, regularly circular forward and downward, was straight behind and followed parallely the posterior border of the inferior maxillary. Above it was limited by the anterior border

of the masseter muscle. The tumor extended in the direction of the inferior border of the masseter in a conical shape, and ended a little posterior to the maxillary fissure. At its base it measured eleven centimeters, and its thickness was about from nine to ten centimeters. The skin was intact; there was no fistulous tract. The tumor was not painful, hard forward and soft behind. An explorative puncture met with a hard and resisting body, and allowed the flow of fœtid brownish fluid. Examination of the mouth revealed a round tumor due to the pushing inward of the mucous membrane, which was not excoriated. All the other functions were normal. The tumor was the cause of the loss of appetite. After careful consideration, a diagnosis of salivary calculi was made, and the treatment decided. This consisted in the removal of the foreign body. The tumor was found to contain a large salivary calculus and several little ones. The large one weighed 532 grammes (over a pound); one small one weighed one gramme. When first removed the large one had a very fœtid odor, analogous to that of the saliva which flowed at the time of exploration. Its weight diminished little by little, and after forty-eight days it had lost forty-one grammes in weight. The only complication which followed the operation was the closing up of the duct of Stenon in the mouth, which was overcome by an artificial opening made by a fine cauterization of the buccal mucous membrane. The recovery was perfect.—*Journal de Lyons.*

CONTRACTION OF THE PYLORIC ORIFICE IN BOVINE.

1*st Case.*—A cow has been sick for about eight days; she lays down, her head and legs stretched out; she is very weak, rises up with difficulty, temperature of the body little below normal, nose dry and rough, abdomen hard and tympanitic. Auscultations and explorations of the abdomen show a complete inertia of the digestive canal. Has had no fæcal passages for two days; the last digestion were very dry. Rumination has stopped; pulse counts 70, internal temperature 40° C.

A diagnosis of gastro entiritis is made, and the animal is condemned to be destroyed. This done, after a few unsuccessful at-

tempts to treatment, the following lesions were found at the post mortem. All the gastric cavities are distended with a soft and even liquid mass; the mucous membrane is slightly injected; the intestine is empty and contains a glairey yellowish fluid. On closer examination the pylorus is found so contracted that a small pencil can scarcely pass through it. The contraction extends about five centimeters in length. This part is hard, difficult to divide with the knife, and has the aspect of a cartilaginous mass. The intestinal wall at that part measures seven millimeters in thickness; the mucous membrane is normal.

2*d Case.*—Another cow presented analogous symptoms and though condemned from the first visit of the attendant, received some treatment and died the 12th day. The post mortem revealed similar lesions to the first case.

The author Klopferstein concludes that these conditions are more common than they have been reported, but escaped the post mortem examination.—*Archives fur Thierheilkunde.*

TUBERCULOSIS FROM THE USE OF MILK OF TUBERCULOUS COWS.

By Prof. Bollinger.

The transmission of tuburculosis by inoculation has been observed by Villimire, Chauveau, Bollinger, &c., and denied by Ruklinghausen. The question of transmission by the use of raw milk is yet more doubted.

If bovine and human tuberculosis are not identical, they however have many points of resemblance.

In 1878, Bollinger gave to three pigs during five weeks, raw milk taken from a cow suffering with chronic pulmonary phthisis; all three remained healthy. In 1879, Bollinger continued his experiments with the milk of a cow which did not seem to be in advanced tuberculous condition. Four young pigs, two and a half months old, were fed with it. After two and a half months they were killed and showed miliary tuberculosis of the liver and kidneys, with pulmonary tubercular lesions—lymphatic glands were in caseous condition. The mother of the pigs was killed

and found healthy. A fifth pig fed for fifteen days with the same milk died also of tuberculosis.

Out of a lot of six other pigs, two received cooked milk, two raw milk, and two were kept as means of comparison. At the autopsy, the first two proved tuberculous, the second showed intestinal inflammation; the glands of the neck and of the abdomen in a caseous condition. In the other two the glands were healthy.

Two other experiments made on monkeys, one on a goat, and one on a guinea-pig, were negative.

According to Bollinger, the milk of tuberculous cows, given for a long time as food, must always produce miliary tuberculosis and tuberculous degenerations. However, one must admit that the danger of the transmission is not as great as generally believed. If it were otherwise, the disease would be more common in swine, while it is exceptional to meet it, though those animals are often fed with the milk of phthisical cows.— *Wochenschrift fur Thierheilkunde.*

(We would be thankful to Dr. Peabody, of Providence, for a report of his observation of tuberculous meningitis in a child fed with the milk of a phthisical cow, which was placed under his care.—Ed.)

EXCHANGES, ETC, RECEIVED.

EXCHANGES.—Revue d'Hygiene, Revue Dosimetrique, Clinica Veterinaria, Veterinary Journal, Veterinarian, Recueil de Medecine Veterinaire, Archives Veterinaires, Annales de Belgique, Gazette Medicale, Revue fur Thierheilkunde und Thierzucht, Scientific American, Prairie Farmer, American Agriculturist, Turf, Field and Farm, Country Gentleman, National Live Stock Journal, Medical and Surgical Reporter, Iowa Farmer.

PAMPHLETS.—Betail de l'Amerique du Nord, by E. Dele.

JOURNALS.—Philadelphia Record, American Cultivator.